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Fact Sheet

South Carolina Department of Health and Environmental Control • www.scdhec.gov

Ammonia

What is ammonia?

Ammonia is a corrosive, colorless gas with a sharp odor. It occurs naturally and is also manufactured by the chemical industry. Ammonia in the gas form is also called anhydrous ammonia. Ammonia gas is often compressed into a liquid form to be transported or stored. If a container of compressed ammonia develops a leak, ammonia gas will rapidly escape.

Ammonia dissolves in water and liquids that contain ammonia can release ammonia gas. Ammonia is used to make household cleaners, in refrigeration units, and to make fertilizers, explosives, fuels and other chemicals. Humans and animals produce ammonia in their intestinal tracts and release ammonia in urine. The source of most ammonia in the environment is the natural breakdown of animal waste and decomposing dead plants and animals.

How can I be exposed to ammonia?

People are most commonly exposed to ammonia by breathing air that contains ammonia gas. People can also be exposed by direct contact with liquids containing ammonia or by breathing ammonia gas released from the liquid. Animal waste, fertilizers and home cleaners are the most common sources of ammonia outside of industrial facilities that make or store it.

In residential settings, many household cleaners contain low concentrations of ammonia. These products are safe to use as long as you follow the instructions on the product labels. Also, people that keep a lot of pets indoors and do not clean up the animal waste may have high levels of ammonia.

In agricultural settings, farms have high levels of ammonia due to animal waste storage and the use of liquid ammonia as fertilizer. People who live downwind of large cow, hog, or chicken farms may be exposed to ammonia. Sewage treatment plants may also release high levels of ammonia.

Industrial sites that store ammonia or use it as a refrigerant can release high levels if the chemical leaks or is spilled. Transportation accidents may also release dangerously high amounts of ammonia. When there is a leak of anhydrous ammonia gas, it usually reacts with the moisture in the air to produce a white-looking cloud.

What are the effects of exposure to ammonia?

Ammonia has a very strong and irritating odor that you can smell at concentrations lower than those which cause health problems. Ammonia's odor threshold is low enough (about 5 parts per million) to provide adequate warning of its presence. The Occupational Safety and Health Administration's (OSHA) permissible exposure limit (PEL) is 50 ppm. Exposure to more concentrated levels can cause headaches, nausea and intense burning of the eyes, nose, throat and skin.

Exposure to very high levels of ammonia gas, such as from leaks or spills at production plants and storage facilities, or from pipelines, tank trucks, railcars, ships or barges used to transport ammonia, can cause serious burns to the eyes and lungs and even death. Individuals with asthma and emphysema may be particularly sensitive to ammonia. When liquids that contain ammonia are swallowed, severe burns of the mouth, throat and stomach can occur.

How can I avoid being exposed to ammonia?

- Store home cleaning supplies out of reach of young children.
- Follow the manufacturer's instructions when using strong household cleaners (increased ventilation may be necessary).
- Never enter agricultural or industrial areas that may contain high levels of ammonia without appropriate training and protection.
- If there is a large ammonia spill, follow the instructions given to you by local emergency response personnel.
- Liquid ammonia fertilizer is hazardous and must be handled with caution.
- ***Never mix ammonia-containing solutions with household bleach or any substance that contains chlorine***, as this releases a highly toxic gas.

What should I do if I suspect a problem?

Ammonia has a very strong, irritating odor. If you ***cannot*** smell ammonia, it is probably not present in the air in a high enough concentration to be harmful. If you ***can*** smell ammonia, health effects are possible. If strong ammonia odors are present in your home, you should leave the area and call the fire department. If there is a strong ammonia odor outdoors, call 911 and follow the instructions given to you by your local emergency personnel. It may very well be safer for you to shelter-in-place, which involves staying in your house, closing the windows and doors and turning off the heating and air conditioning systems. If someone swallows an ammonia-containing liquid, you should seek immediate medical attention.

Elderly people, children and people with lung diseases such as asthma or emphysema may be especially sensitive to irritant chemicals, including ammonia. Sensitive populations like these should avoid exposure to ammonia even at lower concentrations, such as those that are found in household cleaners.

(Adapted with permission from the Wisconsin Department of Health Services)

For more information, visit: http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=2

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